Abstract

It have been more than ten years now, since we last published a documented version of the \texttt{diagram.sty}, which is mainly intended to be used for typesetting chess problems. Since 1994 I (Stefan H"oning) made a couple of enhancements to the sourcecode of the style, without publishing and putting this into the documentation. We also needed to upgrade to \LaTeX\ 2ε. The major change is the documentation language, which is english now.

The style itself tries to collect very detailed information about a chess problem by providing a lot of commands, which you may use to specify the necessary information. There are different reasons for this. One idea was to enable people to read \LaTeX-diagrams into databases with information as detailed as possible. Otherwise it should be easy to change the layout of a diagram by applying a changed style - not by changing the source.
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1 Creating diagrams

1.1 An introductory example

Let us first take a look at a simple example which should only show what you have to type into your \LaTeX-code to get nice looking diagrams.

To use the package you have to make it available to \LaTeX using \texttt{\usepackage{diagram}} inside the preamble of your document.

Then you may use the \texttt{diagram} environment to create the diagrams. For the above example I had to type the following:

\begin{verbatim}
\begin{diagram}
  \author{Brand, Thomas}
  \source{Problemkiste} \year{1992}
  \dedic{Elmar Bartel gew.}
  \pieces[2+3]{wKd1, wBe2, sKh8, sBe4, sTa4}
  \stip{h\#7}
  \sol{1.Ta3 Kc2!, 2.Tf3 e\times f3, 3.e3 f4, 4.e2 f5, 5.e1T f6, 6.Th1! (Te7?) f7, 7.Th7 f8D#}
\end{diagram}

\begin{diagram}
  \setboolean{legend}{true}
  \author{Brand, Thomas}
  \source{Problemkiste} \year{1992}
  \pieces[3+2]{wKa4, wLb5, wSh3, sKb7, sBh4}
  \stip{h\#5}
  \sol{1.Ka8 Sg1, 2.h3 Ka5, 3.h2 Kb6, 4.h\times g1L+ Kc7, 5.La7 Lc6\#}
\end{diagram}
\end{verbatim}
Any information which belongs to a problem should be put between `\begin{diagram}` and `\end{diagram}`. The above examples contains information for *authors*, *source*, *year of publication*, *stipulation*, *solution* and (in diagram 1) a *dedication*.

This information is shown around a chessboard except the solution, which is collected and put into the output using the `\putsol` command.

### 1.2 Elements of a diagram

This section describes the elements which may be used inside a `diagram` environment. For most of these elements there is no sense using them between `\begin{diagram}` and `\end{diagram}`. Some of them will not work outside of the environment (like `—`). In case you use these switches anywhere outside you will specify the information for all problems in your surrounding environment (which may be the complete document).

#### 1.2.1 Collecting the problem information

The following information is typically given with a problem:

- **\author**
  - With the `\author` tag you specify one author or a list of authors. If you specify more than one author, you must separate them with `;`. Normally an author is given as "*sirname, givenname". You may change the way, how the name is interpreted by \LaTeX using `\normalnames` and `\reversednames`. This `\author` command does only overwrite the default behaviour when used inside a `diagram` environment.

- **\Dr, \Prof, \ProfDr**
  - Within the Authors command you should use the commands `\Dr`, `\Prof` and `\ProfDr` to specify these academic titles. So one may switch off the display of these titles — like it is generally done inside *Die Schwalbe*.

- **\pieces**
  - With `\pieces` you specify the position to be displayed on the board. For each kind of piece you may specify a list of fields. Different lists of fields are separated by `", "`. So the general syntax for specifying the position of a specific piece is:
    
    \[ \text{[color][piece]{rotation of piece}}{\text{list of squares}}; \]
    
    e.g. `wTa1h1` should be clear, `nKa4` is a neutral king on a4
    
    `w s n` may be used to specify the color of the piece.
    
    `K D T L S B C E X` may be used to specify the piece. A `C` is used for an imitator, an `E` for an equihopper and an `X` for a rotated equihopper. You may *not* use an optional rotation with `C`, `E` and `X`.
    
    `R U L` may be used to specify an optional rotation: right, upside-down, left. So you may use `sDUc7` for a grashopper on `c7` — displayed as an upsidedown queen.
    
    The characters used to specify color, piece and rotation may be changed using the `\DefinePieces` command.

You may also optionally specify the number of pieces in your diagram, which then will be used to control your input automatically.
There is also support for an imitator, which is typically displayed as a black filled circle. So \texttt{scf4} will produce the symbol of an imitator. This is shown in diagram 3.

\begin{itemize}
\item \texttt{stipulation} is used to specify the stipulation of the problem, e.g. \texttt{stipulation(\#2)} may be used to specify a \textit{mate in two}. There is also an abbreviation \texttt{stip} for this macro.
\item \texttt{city} may be used to specify the city and country, where the author or the authors live. I use this inside the original section of \textit{Die Schwalbe}. You should separate multiple cities (for multiple authors) with "; ". There is also a boolean switch \texttt{showcity}, which controls, whether this information is displayed.
\item \texttt{specialdiagram} may be used to suppress the default diagram numbering (which uses a counter) and instead directly providing a diagram "number" which may be an arbitrary text.
\item \texttt{source} may be used to specify the number which was used for the problem inside an originals section.
\item \texttt{source} may be used to specify the book or magazine where the problem was issued first.
\item \texttt{issue} may be used to specify e.g. the issue of a magazine where the problem was issued.
\item \texttt{pages} may be used to specify the page (or pages) where the problem was issued.
\item \texttt{month} may be used to specify the different parts of the date of publication of the problem. (E.g. for problems issued in the german magazine \textit{Die Schwalbe} you will typically only specify the \texttt{month} and the \texttt{year}. For problems issued in \textit{feenschach} you may specify a period of months like \texttt{\months{7-10}}.)
\item \texttt{tournament} may be used to specify an award and a tournament for the problem.
\item \texttt{award} may be used to specify a dedication which was given by the author of the problem.
\item \texttt{condition} may be used to specify the fairy conditions of a problem. Different conditions should be separated with "; ".
\item \texttt{twins} may be used to specify the different twins of a problem. Different twins should be separated with "; ".
\item \texttt{remark} may be used to specify remarks to the problem. I typically use this to explain fairy pieces on the board. You may also use the abbreviation \texttt{rem}.
\item \texttt{piecedefs} may be used to explain rotated pieces. An example:
\begin{verbatim}
\piecedefs{{ws}{TL}{Turm-L"aufer-J"ager}; {wn}{SU}{Nachtreiter}}
\end{verbatim}
will create
\begin{verbatim}
\hfill = Turm-L"aufer-J"ager
\hfill = Nachtreiter
\end{verbatim}
under the diagram.
\end{itemize}
\solution  
- \solution may be used to specify the solution of the problem. Normally this information is not used while displaying the board but it is only collected and may be put into your text using \putsol. There is also an abbreviation \sol.

\judgement  
- May be used to describe the judgement given for a problem, e.g. when you are working on an award or when you are selecting problems for a "best of ..." book.

\comment  
- May be used to specify some comment on the problem (e.g. the authors original comment.)

\themes  
- May be used to specify themes displayed in the problem. Different themes should be separated with "; ". When creating a theme index, the themes will automatically be used to create the register.

There are some commands which not only collect information but normally direct result in a change of the diagram. These are:

\verticalcylinder  
- does not display the outer vertical lines to symbolize a verticalcylindric board.

\horizontalcylinder  
- does not display the outer horizontal lines to symbolize a horizontalcylindric board.

\noframe  
- does completely suppress the outer frame e.g. to symbolize a torus board.

\ninnerframe  
- sometimes you need to suppress the inner frame instead of the outer frame which is achieved by using \ninnerframe. You may not use this together with \noframe.

\gridchess  
- displays lines to separates fieldsections for gridchess.

1.2.2 Modifying the layout of the diagram (and the solution)

There are a couple of switches which control the layout of the diagrams. These are typically used more generally, so you may specify these switches outside the diagram environment or use them in your own style, which depends on cpd.sty.

There are some switches which control the layout of the information which is displayed above a diagram:

\diagleft  
- displays the information left aligned

\diagcenter  
- displays the information centered

\diagright  
- displays the information right aligned

\widedias  
- is like \diagcenter but the information shown above the diagram may span the whole width of the page. So \LaTeX{} will not wrap long author names.

\dianamestyle  
Using \dianamestyle (or \solnamestyle) you may specify how authornames are written above the boards (or before the solutions). You may use this only if you use \reversednames (which is the default). Otherwise it is not possible to distinguish between firstname and surname. You must specify one of the following options as parameter to \dianamestyle (or \solnamestyle):

6
fullname  Writes the authorname as firstname sirname. This is the default.
sirname  Writes the sirname only.
short  Writes an abbreviation of the firstname and the sirname. The abbreviation is calculated as follows:

- The first letter of the firstname will be used.
  \author{Brand, Thomas} will be displayed as T. Brand
- When there is a combined firstname separated with a hyphen, each first letter will be used. (see below)
  \author{Reich, Hans-Peter} will be displayed as H.-P. Reich
- When specifying the author name, you may provide the abbreviation for the firstname using the form sirname, firstname/abbreviation.
  \author{Brand, Thomas/Th.} will be displayed as Th. Brand

curname  displays nothing

\pagenumbering  The same way you may specify \pagenumbering you may specify the format the diagrams are numbered using \pagenumbering and \pagenumbering you may specify arabic, Roman, roman, Alph or alph. The default used is arabic. This command also switches the display for diagram numbers on.

\setmonthstyle  You may also specify the way a month is displayed using \setmonthstyle. There are some boolean switches, which control whether a specific information is displayed. These are as follows:

- This is a \LaTeX boolean, which is used to specify whether the number of pieces is displayed below the board. So you may change its value using \setboolean{piececounter}{true} or \setboolean{piececounter}{false}.

- There is a boolean value computer, which controls whether the information about a computer proof is displayed or not. This value may be changed using \setboolean{showcomputer}{true} or \setboolean{showcomputer}{false}.
  For backwards compatibility we support the macros \nocomputer and \showcomputer.

- This is a boolean switch, which controls whether the informated gathered using the \city command is displayed. The default of this value is false.

- This is a boolean switch, which controls whether academic titles \Dr, \Prof or \ProfDr — typically used within the \author command — are displayed. The default is true.

- This boolean controls whether a legend is displayed. The default value of this value is false. When legends are displayed the distance between inner and outer frame is automatically adjusted.

\notcomputerproofedsymbol  You may specify the text, which is used indicate, whether a problem is proofed by a computer. To specify the symbol for a problem, which is proofed, is created by \computerproofedsymbol. To specify the symbol for a problem, which is not computer proofed, is created by \notcomputerproofedsymbol. You may redefine these commands by standard \LaTeX means (\renewcommand).

\selectelchfont  You may specify which font is used for the chesspieces. There are two possible fonts:
\textbf{pk} for the font which was originally used in the German magazine \textit{Problemkiste}.

\textbf{fs} for the font which was first used (and was created for) the magazine \textit{feenschach}.

\diagramx In analogy to the defaults for font sizes of a document you may specify sizes of the fonts used in a diagram. The default will be set according to the fontsize specified as the \texttt{documentclass} option.

\subsection{Other commands}

\item \texttt{\label} This overrides the normal \texttt{\label} definition such that the diagram number is displayed when using \texttt{\ref} instead of the page number.

\item \texttt{\diagnum} This macro expects a number as a parameter. The number will be used to (re-)initialize the diagram number counter. With this command the output of diagram numbers also is switched on. It must be used outside the \texttt{diagram} environment. As an optional parameter you may specify something, which will be used as prefix before the automatically updated diagram numbers. E.g. the command \texttt{\diagnum[T-]{4}} will produce the following diagram numbers for the following diagrams: \texttt{T-4, T-5, T-6, ...}

\subsection{Special boards}

\subsubsection{Changing the boardsize}

\texttt{\begin{diagram}} Instead of using a boardsize of $8 \times 8$ some fairy problems need smaller or larger boards. This can be achieved by specifying the rows and columns as an optional parameter to the \texttt{\begin{diagram}} environment. You first have to specify the lines and then the rows as the following examples shows.

\begin{Verbatim}
3
\end{Verbatim}

\begin{figure}[h]
\centering
\begin{diagram}[17x11]
\label{bigdia}
\pieces{wKUi{11}, sKRj9, sCc5b4}
\end{diagram}
\caption{C- (1+1)}
\end{figure}

As you can see in the example, pieces are set using the \texttt{\pieces} macro. When using boards with more than 8 lines you have to continue with characters i, j, k, ... In a board with more than 9 rows you have to specify the rows in curly braces \{ \} as shown in the example.
1.3.2 Stereo- and Space-Chess-Diagrams

Other boards which are used from time to time are stereo chess or space chess boards (although there are quite few people which really have such boards!). To create these boards you just have to use either the `stereodiagram` or `spacediagram` environment instead of the normal `diagram` environment. Here is an example:

These diagrams have been produced by the following code:

```
\begin{stereodiagram}
\author{Jensch, Gerhard W.}
\sourcenr{3104.}
\source{feenschach}
\year{1980}
```

```
The main change is within the notation of the pieces, but people knowing space- or stereo-chess problems see that the notation is just one would expect. Sometimes one would like show the different planes of a space diagram from left to right. This may be switched using the \spacelayout command, which takes one parameter:

- **vertical** for planes organized bottom up
- **horizontal** for planes organized left to right

Is produced by

\begin{spacediagram}[4x2x3] 
\spacelayout{horizontal} 
\end{spacediagram}

### 1.3.3 Cylindric boards / suppressing frames

To stylize a cylindric board one typically does not show parts of the frame. When using \verticalcylinder the horizontal lines of the outer frame will not be drawn. \horizontalcylinder suppresses the drawing of the vertical lines of the outer frame. Using \noframe completely supresses the outer frame. In case of stereo- or space-chess-diagrams \verticalcylinder, \horizontalcylinder and \noframe suppresses the inner frame.

### 1.4 Change the coloring of the fields

The allwhite boolean can be used to have all white squares. Therefore dotted lines are produced to separate the squares. For convenience we provide a command allwhite which switches the value of the allwhite boolean to true.
This was produced by:
\begin{diagram}
\allwhite
\pieces{wKe1, wDd1, wTa1h1, wLf1c1, wSb1g1, %
sKe8, sDd8, sTa8h8, sLf8c8, sSb8g8}
\end{diagram}

The boolean \switchcolors may be used to switch the coloring of white and black fields. For convenience we provide a command \switchcolors which switches the value of the \switchcolors boolean to true.

1.4.1 figurine Notation

\figurine Instead of using the \begin{diagram} \end{diagram}, \begin{stereodiagram} \end{stereodiagram} or \begin{spacediagram} \end{spacediagram} environment one may use the \figurine environment. This suppresses the diagram output and produces a figurine notation inside the current text.

1.4.2 Changes within the board

\nofields \nosquares You may remove single fields by using the \begin{nofields} or \begin{nosquares} command. Using this command does make sense for empty black fields only. This command expects a list of squares separated by ",", ".". You may also use this command within a stereo- or space-diagram. In this case you must specify the fields the same way you do it inside the \pieces command.

\fieldframe You may specify single fields, which should be surrounded by a frame. This is possible using the \fieldframe command. You must specify the list of fields which should have frames the same way you specify fields within the \nofields command.

\gridlines A more general form of lines within diagrams is possible by using the \gridlines command. You may specify a list of horizontal or vertical lines within the diagram. Different lines should be separated by ",", ".". A single line must be specified as:
\texttt{[plane](v or h)(x-coordinate)(y-coordinate)(length in squares)}
You must specify a plane in case of stereo- or space-chess only. For a vertical line starting at the lower left corner of "c2" ending at the upper left corner of "c8", the command to use is: \gridlines{v217}. Concerning the coordinates and length specifications you should pay attention to put values greater 9 in curly braces {}.

Sometimes you need to show text on some squares. This is done using the \fieldtext command. The syntax for a single text is: \{Text\}(x-coordinate)(y-coordinate)

Now an example how to use \gridlines, \nofields and \fieldtext to create some "Letter-Board" with text inside.

\begin{diagram}[9x7]
\noinnerframe
\nofields{a2, b2, c2, a3, b3, c3, %
  b5, c3, d3, e3, d3, %
  e1, e2, e3, e4, e5, e6, e7, %
  g1, h1, h2, g3, h3, g5, h5, g6, h6, g7, h7}
\gridlines{h004, h013, h033, h143, h163, h074, %
  v001, v034, v142, v312, v404, v461, %
  h51, h57, h632, h642, h801, h871, %
  v507, v603, v643, v803, v843, v907}
\fieldtext{{It ...}c5, {works}b2}
\end{diagram}

1.5 Misc

1.5.1 Chess pieces within normal text

Sometimes you may need symbols of chess pieces within your normal text, e.g. to show the Viele-Väter-Stellung \( \textcolor{red}{\text{\textbackslash wK}}c8, \textcolor{blue}{\text{\textbackslash wB}}b6, \textcolor{green}{\text{\textbackslash sK}}a8, \textcolor{purple}{\text{\textbackslash sB}}a7 \). This is possible by \{\textcolor{red}{\text{\textbackslash wK}}c8, \{\textcolor{blue}{\text{\textbackslash wB}}b6, \{\textcolor{green}{\text{\textbackslash sK}}a8, \{\textcolor{purple}{\text{\textbackslash sB}}a7 \}. Additionally you may use some of these symbols:

\swL ☜ a white bishop on a black square
\swL ☜ a black bishop on a black square
\wNr ☜ a white nightrider
\nNr ☜ a neutral nightrider
\sNr ☜ a black nightrider
\wGh ☜ a white grashopper
\nGh ☜ a neutral grashopper
\sGh ☜ a black grashopper
\Imi ☜ an imitator, you may also use the Circle notation:
\wC ☜ a white circle
\nC \(\bullet\) a neutral circle
\aC \(\bullet\) a black circle
\nE \(\n\) a white equihopper
\aE \(\n\) a black equihopper
\nE \(\n\) a neutral equihopper
\nE \(\n\) a white rotated equihopper
\aE \(\n\) a black rotated equihopper
\nE \(\n\) a neutral rotated equihopper

1.5.2 Other often used symbols

The style also defines commands for other symbols, which are often used within the declaration of twins or when writing a solution:

\set * setplay
\ra \(\rightarrow\) a left to right arrow
\lra \(\leftrightarrow\) a double ended arrow
\OO king side castling
\OOO queen side castling
\x \(\times\) for "'takes'"
\any \(\sim\) for any move (you may not simply use a \(\sim\) within your text because \(\text{TeX}\) handles this as a protected space)

1.5.3 Internationalization

\DefinePieces This part is relevant for people who do not like the german notation for pieces and therefore want to change this within their sources. Using the german notation, you specify the color of a piece as \(\text{w, s or n}\), the type of a piece as \(\text{K, D, T, L, S, B}\) and a possible rotation of a piece as \(\text{L, R or U}\). To use another notation you may use the \DefinePieces command which takes 3 parameters.

1. the letters used to specify the colors of the pieces using the order white, black, neutral

2. the letters used to specify the type of a piece using the order king, queen, rook, bishop, knight, pawn. You may not use the characters \(\text{C, E and X}\), because these are used for Circle, Equihopper and rotated Equihopper.

3. the letters used to specify an optional rotation using the order left-turned, right-turned, upside-down. You must use capital letters for this.
When using a \DefinePieces command, the commands are changed to its next usage (or to the end of the document). The command not only changes the pieces you may use within the \pieces command but also defines commands to be used within normal text, as the following example shows:
\DefinePieces\{wbn\}\{KQRBNP\}\{LRU\}
\wDU\bKR\bwB
creates ♕♚♕♚

1.5.4 When writing books

\develop
To simplify your writings you may use the macro \develop. This will create the following additional information during development:

- when you use \label in your diagrams the label will be shown at the left upper corner of the diagram.
- The given label will also be shown inside the solution and also in any register entry.
- when you have specified a \judgement this information will be put into the solution.

Most books on chess problems contain registers for authors, sometimes also on themes and sources. As you already collect all these information very detailed within the diagram environment the generation of registers is very simple.

To create a registers of authors you need to put the \makeindex command inside the preamble of your document. This instructs LaTeX to write an intermediate file containing information about authors and the numbers of the diagrams.¹ After a first \LaTeX run on your document, you need to convert the intermediate file. This may be done with the makeindex program, which will typically called like

makeindex -o <filename>.and <filename>.adx

The resulting register may be put into your document using the \authorindex command.

\makeindex \authorindex

Like an index for authors you may also create indices for sources and/or themes. For an source register you need to put \makeindex into your document preamble; for a theme register the command is \maketindex. The conversion commands for the intermediate files are

makeindex -o <filename>.snd <filename>.sdx
for the source register and

makeindex -o <filename>.tnd <filename>.tdx
for the theme register.

The source register is inserted into the text using \sourceindex and the theme register using \themeindex.

1.5.5 Other useful stuff

\solpar
In some environments — like window — the use of \par leads to unwanted effects. Therefore we use the command \solpar inside the definition of \@dia@solution, which is used to display a single solution when using

¹Normally registers contain page numbers but with chess problems normally people refer to the diagram numbers.
\put\sol. You may use \texttt{\renewcommand\solpar} to provide another definition of \solpar in such situations.

\section{The documentation driver}

The following code will generate the documentation. Since it is the first piece of code in the file, the documentation can be obtained by simply processing the file with \LaTeX\textsuperscript{2e}.

\begin{verbatim}
\documentclass[a4paper]{article}
\usepackage{doc}
\usepackage{diagram}
\EnableCrossrefs
\CodelineIndex
\RecordChanges
\begin{document}
\DocInput{diagram.dtx}
\end{document}
\end{verbatim}

\section{The implementation of the style}

Specifies the preamble of our style file.

\begin{verbatim}
\providecommand{\DefaultDiagramSize}
\newcommand*{\DefaultDiagramSize}{}
\DeclareOption{10pt}{\renewcommand*{\DefaultDiagramSize}{\diagramx}}
\DeclareOption{11pt}{\renewcommand*{\DefaultDiagramSize}{\diagramxi}}
\DeclareOption{12pt}{\renewcommand*{\DefaultDiagramSize}{\diagramxii}}
\ExecuteOptions{10pt}
\ProcessOptions
\AtBeginDocument{\DefaultDiagramSize}
\RequirePackage{ifthen}
\RequirePackage{calc}
\RequirePackage{pstricks}
\end{verbatim}

Now we declare some constants to unify its usage within the style file.

\begin{verbatim}
\chardef\fur=4
\chardef@ight=8
\newcount\elchfont
\chardef@pkelch=0
\chardef@fselch=1
\newcount\dia@type
\end{verbatim}
We have counters for each color to count the pieces on the board.
We need a lot of token registers to register the information from within the diagram environment. These token registers are defined here. Initially each token register is defined to contain \relax, which serves as an end-marker when parsing lists.
\newtoks\day@tk\day@tk={\relax}
\newcount\from@month\from@month=\z@
\newcount\to@month\to@month=\z@
\newtoks\year@tk\year@tk={\relax}
\newtoks\issue@tk\issue@tk={\relax}
\newtoks\pages@tk\pages@tk={\relax}
\newtoks\tournament@tk\tournament@tk={\relax}
\newtoks\award@tk\award@tk={\relax}
\newtoks\after@tk\after@tk={\relax}
\newtoks\version@tk\version@tk={\relax}
\newtoks\correction@tk\correction@tk={\relax}
\newtoks\dedic@tk\dedic@tk={\relax}
\newtoks\fidealbum@tk\fidealbum@tk={\relax}
\newtoks\theme@tk\theme@tk={\relax}
\newtoks\twins@tk\twins@tk={\relax}
\newtoks\judgement@tk\judgement@tk={\relax}
\newtoks\comment@tk\comment@tk={\relax}
\newtoks\computer@tk\computer@tk={-}
\newtoks\nofields@tk\nofields@tk={\relax}
\newtoks\fieldframe@tk\fieldframe@tk={\relax}
\newtoks\gridlines@tk\gridlines@tk={\relax}
\newtoks\pieces@tk\pieces@tk={\relax}
\newtoks\fieldtext@tk\fieldtext@tk={\relax}
\newtoks\text@tk\text@tk={\relax}
\newtoks\stipulation@tk\stipulation@tk={\relax}
\newtoks\condition@tk\condition@tk={\relax}
\newtoks\remark@tk\remark@tk={\relax}
\newtoks\piecedefs@tk\piecedefs@tk={\relax}

To remember, which information has been specified, we define \TeX-boolean
for each command.
\newif\if@label\@labelfalse
\newif\if@number\@numberfalse
\newif\if@special\@specialfalse
\newif\if@at\@atfalse
\newif\if@city\@cityfalse
\newif\if@sourcenr\@sourcenrfalse
\newif\if@source\@sourcefalse
\newif\if@date\@datefalse
\newif\if@day\@dayfalse
\newif\if@year\@yearfalse
\newif\if@issue\@issuefalse
\newif\if@pages\@pagesfalse
\newif\if@tournament\@tournamentfalse
\newif\if@award\@awardfalse
\newif\if@after\@afterfalse
\newif\if@version\@versionfalse
\newif\if@correction\@correctionfalse
\newif\if@dedication\@dedicationfalse
\newif\if@fidealbum\@fidealbumfalse
\newif\if@twins\@twinsfalse
\newif\if@theme\@themefalse
\newif\if@computer\@computerfalse
\newif\if@judgement\@judgementfalse
\newif\if@comment \@commentfalse
\newif\if@pieces \@piecesfalse
\newif\if@fieldtext \@fieldtextfalse
\newif\if@nofields \@nofieldsfalse
\newif\if@gridlines \@gridlinesfalse
\newif\if@fieldframe \@fieldframefalse
\newif\if@stdgrid \@stdgridfalse
\newboolean{showcomputer} \setboolean{showcomputer}{true}\%
\newcommand*{\computerproofedsymbol}{C+}
\newcommand*{\notcomputerproofedsymbol}{C-}
\newif\if@show@computer \@show@computertrue
\newif\if@stipulation \@stipulationfalse
\newif\if@condition \@conditionfalse
\newif\if@remark \@remarkfalse
\newif\if@piecedefs \@piecedefsfalse
\newif\if@typis \@typisfalse
\newif\if@widedias \@widediasfalse
\newif\ifx@twins \x@twinsfalse
\newif\ifx@cond \x@condfalse
\newif\imitator \imitatorfalse
\newif\ifnormal@names \normal@namesfalse
\newif\ifs@lu
\newif\if@develop \@developfalse
\newif\if@notfirst
\newwrite\s@lfd
\let\below@newline=\relax
% These are used by the "old" board creating mechanism
\newcount\@lines
\newcount\@rows
\newcount\lines@max
\newcount\rows@max
\newcount\planes@max

The following counters are used when creating the diagram itself.
\newcounter{cpd@rowsmax}
\newcounter{cpd@linesmax}
\newcounter{cpd@current@row}
\newcounter{cpd@current@line}
\newcounter{cpd@maxsquare}
\newcounter{cpd@helper}
\newcounter{cpd@current@square@index}
\newcounter{cpd@current@square@value}

Some boolean \TeX-switches used within stereo- or spacechess diagrams.
\newif\if@stereo \@stereofalse
\newif\if@space \@spacefalse

These boolean switches are used to control the output of registers.
\texttt{\textbackslash diagram} Defines the code executed in \texttt{\begin{diagram}}. In case no optional size is given, a normal 8×8 board is generated.

\begin{verbatim}
def\diagram()
  \begingroup
  \@ifnextchar [\@diagram{\@ight x\@ight}]
  \@diagram\[
  \def\@diagram[#1x#2]{
    \lines@max=#1
    \rows@max=#2
    \setcounter{cpd@linesmax}{#1}
    \setcounter{cpd@rowsmax}{#2}
    \setcounter{cpd@maxsquare}{\value{cpd@rowsmax}\times\value{cpd@linesmax}}
    \pl@ne=\z@\current@plane=\z@
    \let\put@sqs=\put@sqs@normal
    \let\read@plane=\read@plane@normal
    \@start@diagram
  }

  \def\stereodiagram{
    \begingroup
      \@stereotrue
      \let\put@sqs=\put@sqs@stereo
      \let\read@plane=\read@plane@stereo
      \@start@diagram
  }

  \def\spacediagram{
    \begingroup
      \@spacetrue
      \@ifnextchar [\@spacediagram{\@spacediagram[5x5x5]}]
      \@spacediagram[#1x#2x#3]{
        \lines@max=#1
        \rows@max=#2
        \planes@max=#3
        \let\put@sqs=\put@sqs@space
        \let\read@plane=\read@plane@space
        \@start@diagram
  }

  \def\@start@diagram{
    \init@vars
    \let\author=\ds@author
    \let\day=\ds@day
    \let\month=\ds@month
    \let\year=\ds@year
    \let\label=\ds@label
    \ignorespaces
  }

  \def\showtypis#1{
    \@typistrue
    \typis@tk={#1}
  }
\end{verbatim}
\def\enddiagram{\let\author=\orig@author\let\day=\orig@day\let\month=\orig@month\let\year=\orig@year\let\label=\orig@label\if@number\else\refstepcounter{board@nr}\fi\% Now \label@tk should be set, if wanted, so \% we can generate the index entries\% \% Now \currentlabel will be set right, so we can use\% the original label\% \if\label\expandafter\@set@label\the\label@tk;\fi\% Now we know, if we have frames so we can setup our dimensions\% \global\sq@width=\fontdimen\tw@\chessfont\% \if\@stereo\bd@width=\@ight\sq@width\board@width=\@ight\sq@width\ifdim\h@frame@dist<\sq@width\h@frame@dist=\sq@width\fi\% We do already skip with \v@space@dist\% So we use the additional skip \space@frame@dist here\% \v@frame@dist=\space@frame@dist\% \ifdim\space@frame@dist<\outer@frame\outer@frame=\space@frame@dist\% \fi\% \advance\bd@width\tw@\inner@frame\% \advance\board@width\tw@\inner@frame\% \advance\board@width\tw@\h@frame@dist\% \advance\board@width\tw@\outer@frame\% \else\if\space\ifdim\h@frame@dist<1.5\sq@width\h@frame@dist=1.5\sq@width\% \fi\% We do already skip with \v@space@dist\% So we use the additional skip \space@frame@dist here\% \v@frame@dist=\space@frame@dist\% \ifdim\space@frame@dist<\outer@frame\outer@frame=\space@frame@dist\% \fi\%}
\outer@frame=\space@frame\%
\fi
\ifs@space@vertical
  \bd@width=\lines@max\sq@width\%
  \board@width\bd@width\%
  \advance\bd@width\tw@\inner@frame\%
  \advance\board@width\tw@\inner@frame\%
  \advance\board@width\tw@\h@frame@dist\%
  \advance\board@width\tw@\outer@frame\%
\else
  \bd@width=\lines@max\sq@width\%
  \advance\bd@width\tw@\inner@frame\%
  \ifdim\h@space@dist<1.5\sq@width\%
    \h@space@dist=1.5\sq@width\%
  \fi
  \%\h@space@dist=0.7\sq@width\%
  \% Now we can compute the width of the complete board
  \board@width\bd@width\%
  \advance\board@width\h@space@dist\%
  \multiply\board@width\planes@max\%
  \advance\board@width\h@space@dist\%
  \advance\board@width\tw@\outer@frame\%
\fi
\else
\ifthenelse{\boolean{legend}}{\v@frame@dist=1.5em\h@frame@dist=1.5em}{%}
\bd@width=\lines@max\sq@width\%
\ifnum\lines@max>\@ight%
% Make the board wider
  \board@width=\lines@max\sq@width\%
\else%
% Make a normal width
  \board@width=\@ight\sq@width\%
\fi
\advance\bd@width\tw@\inner@frame\%
\advance\board@width\tw@\inner@frame\%
\advance\board@width\tw@\h@frame@dist\%
\advance\board@width\tw@\outer@frame\%
\fi\fi
\if@widedias%
  \head@width=\textwidth\%
\else%
  \head@width=\board@width\%
\fi
% Now we should build the diagram itself
% \ifthenelse{\boolean{@textproblem}}{% Put the stipulation into the \sq@box
  \setbox\sq@box=\hbox{\vbox to \board@width{\hsize\board@width{\stipfont%
    \raggedright%
    \sloppy%
    \the\stipulation@tk%
  \vfil\%}}}%
\def\do@put@count{%\\
  \ifthenelse{\arabic{cpd@whitePieces}+\arabic{cpd@blackPieces}}{\bigbreak\par\vadjust{\vbox to0pt{}}}{\vspace{-0.25in}}\ifthenelse{\value{cpd@neutralPieces}>0}{+\arabic{cpd@neutralPieces}}{}%}
\def\put@count{%\\% First we build the box with the figure count\\%  \ifthenelse{\boolean{showcomputer}\OR\boolean{piececounter}}{\\%     \global\setbox\@cnt@box=\hbox{\\%         \stipfont\\%         \ifthenelse{\boolean{showcomputer}}{\\%             \if@computer\computerproofedsymbol\else\notcomputerproofedsymbol\fi\\%         }{}\\%         \ifthenelse{\boolean{piececounter}}{\\%             \do@put@count\\%         }{}%}
%}
\@cnt@wd=\wd\@cnt@box\\%  \hangindent-\@cnt@wd\\%  \hangafter1\noindent\\%  \hbox to\z@ {\\%    \hbox to\board@width{\hfil\unhbox\@cnt@box}\hskip-\board@width\\%}\\%
}%
\let\endstereodiagram=\enddiagram\\% \let\endspacediagram=\enddiagram\\\def\figurine{%\\%  \begingroup\\%  \init@vars\\%  \let\author=\ds@author\\%  \let\day=\ds@day\\%  \let\month=\ds@month\\%  \let\year=\ds@year\\%  \let\label=\ds@label\\%}
\def\endfigurine{%\\%  \let\author=\orig@author\\%  \let\day=\orig@day\\%  \let\month=\orig@month\\%  \let\year=\orig@year\\%  \let\label=\orig@label\\%  \if@number% so \label and \ref work properly\\%    \refstepcounter{board@nr}\else%\\%      \if\number\value{cpd@whitePieces}+\number\value{cpd@blackPieces}>0\vadjust{\vbox to0pt{}}{+\number\value{cpd@neutralPieces}}\fi\\%\\% Now \label@tk should be set, if wanted, so\\% we can generate the index entries
Here we define commands to change fonts used for text above and below the diagram. You may redefine to adjust the fonts to your needs.

\bfseries\authorsfont
\slshape\cityfont
\bfseries\itshape\sourcefont
\itshape\awardfont
\itshape\dedicfont
\rmfamily\stipfont
\rmfamily\remfont
\rmfamily\labelfont
\rmfamily\cpd@boardfont
\sffamily\legendfont

We have three different default sizes for diagrams. The following commands switch font sizes used for the chessfonts to typeset the diagrams.

\bfseries\authorsfont
\bfseries\sourcefont
\bfseries\awardfont
\bfseries\dedicfont
\bfseries\stipfont
\bfseries\remfont
\bfseries\labelfont
\bfseries\cpd@boardfont
\bfseries\legendfont
Now we define a couple of abbreviations and special symbols often used when setting problem chess documents.

\ra\lra\rla\x
\set\OO\OOO\any\further
\spacelayout\nodiagnumbering
\defottrue\diagnum{\one}
The macros `diagoncenter`, `diagleft` and `diagright` simply define the macro `hedefpos` to the corresponding paragraph alignment.

\diagcenter
\def\hedefpos\centering  
\def\hedefpos\raggedright  
\def\hedefpos\raggedleft

\setmonthstyle The implementation of \setmonthstyle does \diagnumbering define a command which uses the given parameter as a part of the command name.

\def\setmonthstyle#1\def\write@month\csname @#1\endcsname
\def\specialdiagnum#1{\@specialtrue\number@tk={#1}\@numbertrue\def\thediag{#1}\def\@currentlabel{#1}\ignorespaces}

\ds@label The macros `\ds@label` and `\ds@author` are defined internally and are made public within `\begin{diagram}`. This is because the macros `\label` and `\author` are normal \LaTeX-macros and I want to avoid to redefine these globally.

\def\ds@label\def\ds@xlabel\@ifstar\ds@labelfalse\ds@xlabel\def\ds@xlabeltrue\ds@xlabel\ignorespaces
\def\ds@author#1\aut@tk={#1}\auth@rtrue\ignorespaces
\def\ds@day#1\day@tk={#1}\@datetrue\@daytrue\ignorespaces
\def\ds@author#1\aut@tk={#1}\auth@rfalse\aut@tk={#1}\auth@rtrue\ignorespaces

\ds@academictitle
\Dr \def\ds@academictitle#1 ifthenelse\{boolean(showacademictitle)\}{1}{negspaces} \def\ds@academictitle#1 Dr\ignorespaces
\Prof \newcommand\Dr\{\ds@academictitle\{Dr\}\} 
\ProfDr \newcommand\Prof\{\ds@academictitle\{Prof\}\}
\newcommand\ProfDr\{\ds@academictitle\{Prof.	\Dr\}\}

\def\city#1\city@tk={#1}\city@tk\ignorespaces
\def\sourcenr#1\sourcenr@tk={#1}\sourcenr@tk\ignorespaces
\def\source#1\source@tk={#1}\source@tk\ignorespaces
\def\ds@day#1\\day@tk={#1}\day@tk\ignorespaces
\def\ds@month#1\\from@month={#1}\from@month\ignorespaces
\def\months#1{\@months#1;}
\def\ds@year#1{\year@tk={#1}\@yeartrue\@datetrue}
\def\issue#1{\issue@tk={#1}\@issuetrue}
\def\pages#1{\pages@tk={#1}\@pagestrue}
\def\tournament#1{\tournament@tk={#1}\@tournamenttrue}
\def\award#1{\award@tk={#1}\@awardtrue}
\def\version#1{\version@tk={#1}\@versiontrue}
\def\after#1{\after@tk={#1}\@aftertrue}
\def\correction#1{\correction@tk={#1}\@correctiontrue}
\def\dedication#1{\dedic@tk={#1}\@dedicationtrue}
\def\fidealbum#1{\fidealbum@tk={#1}\@fidealbumtrue}
\def\pieces{\@ifnextchar[{{\x@pieces}{\@pieces}}}
\def\x@pieces[#1]{\setboolean{cpd@checkPieceCounts}{true}}
% We should parse the given piececounts
\setboolean{cpd@checkPieceCounts}{true}
\@parseWhiteAndBlackCount#1+\@pieces%\{\setcounter{cpd@defWhitePieces}{#1}\setcounter{cpd@defBlackPieces}{#2}\futurelet\n@xt\cpd@checkNeutral%\let\cpd@nextproc=\relax%\def\cpd@checkNeutral{%\if\n@xt\relax%\let\cpd@nextproc=\relax%\else%\let\cpd@nextproc=\@parseNeutralCount%\fi%\cpd@nextproc%}\def\@parseNeutralCount#1+%{\setcounter{cpd@defNeutralPieces}{#1}%}\def\@pieces#1{%\pieces@tk={#1}\@piecestrue%\ignorespaces%}\def\fieldtext#1{%\fieldtext@tk={#1}\@fieldtexttrue%\ignorespaces%}\def\nofields#1{%\nofields@tk={#1}\@nofieldstrue%\ignorespaces%}\let\nosquares\nofields%\def\gridlines#1{%\gridlines@tk={#1}\@gridlinestrue%\ignorespaces%}\def\fieldframe#1{%\fieldframe@tk={#1}\@fieldframetrue%\ignorespaces%}\def\stipulation#1{%\stipulation@tk={#1}\@stipulationtrue%\ignorespaces%}\def\condition{%\@ifstar{%\x@condtrue\@condition}{\@condition}%\def\@condition#1{%\condition@tk={#1}\@conditiontrue%\ignorespaces%}\def\twins{%\@ifstar{%\x@twinstrue\@twins}{\@twins}%
Here we define some abbreviations and synonyms for other macros.

\let\gridchess=\stdgrid
\let\magic=\fieldframe
\let\tourn=\tournament
\let\dedic=\dedication
\let\stip=\stipulation
\let\rem=\condition
\let\sol=\solution

\def\develop{\@developtrue}%
\def\showcomputer{\setboolean{showcomputer}{true}%
\def\nocomputer{\setboolean{showcomputer}{false}%
\def\putsol{\immediate\closeout\s@lfd\input\jobname.sol\cl@arsol}
\def\widedias{\@widediastrue\diagcenter}
\def\nowidedias{\@widediasfalse}
\def\normalnames{\normal@namestrue}
\def\reversednames{\normal@namesfalse}
\def\makeindex{\@dia@index%
\newindex[\thedig]{author}{adx}{and}{Autorenverzeichnis}%
\@aindextrue\reversednames%
}
\def\authorindex{{\let\@idxitem\@aidxitem\printindex[author]}}
\def\sourceindex{\printindex[source]}
\def\makesindex{\@dia@index%
\newindex[\thedig]{source}{sdx}{snd}{Quellenregister}%
\@sindextrue%
}
\def\maketindex{\@dia@index%
\newindex[\thedig]{theme}{tdx}{tnd}{Themenregister}%
\@tindextrue%
}
\def\authorindex{{\let\@idxitem\@aidxitem\printindex[author]}}
\def\sourceindex{\printindex[source]}

\def\themeindex{\printindex[theme]}
\def\DefinePieces#1#2#3{% 
\@setPieceColor#1\@setPieceSpec#2\@setPieceRotation#3%
\loop@rotation%
\expandafter\xdef\csname\ds@black\endcsname{\noexpand\ch@fig{20}}%
\expandafter\xdef\csname\ds@white\endcsname{\noexpand\ch@fig{32}}%
\expandafter\xdef\csname\ds@black F\endcsname{{\chessfont\char\endcsname}}
\expandafter\xdef\csname\ds@black F\endcsname{{\chessfont\char144}}
\expandafter\xdef\csname\ds@white Nr\endcsname{\noexpand\ch@fig{109}}%
\expandafter\xdef\csname\ds@neutral Nr\endcsname{\noexpand\ch@fig{115}}%
\expandafter\xdef\csname\ds@black Nr\endcsname{\noexpand\ch@fig{121}}%
\expandafter\xdef\csname\ds@white Gh\endcsname{\noexpand\ch@fig{112}}%
\expandafter\xdef\csname\ds@neutral Gh\endcsname{\noexpand\ch@fig{118}}%
\expandafter\xdef\csname\ds@black Gh\endcsname{\noexpand\ch@fig{124}}%
\expandafter\xdef\csname\ds@white C\endcsname{\noexpand\ch@fig{145}}%
\expandafter\xdef\csname\ds@neutral C\endcsname{\noexpand\ch@fig{151}}%
\expandafter\xdef\csname\ds@black C\endcsname{\noexpand\ch@fig{157}}%
\Imi{\noexpand\ch@fig{157}}
\wE{\noexpand\ch@fig{216}}
\nE{\noexpand\ch@fig{222}}
\sE{\noexpand\ch@fig{228}}
\wX{\noexpand\ch@fig{180}}
\nX{\noexpand\ch@fig{186}}
\sX{\noexpand\ch@fig{192}}
\dia@above The content of the box above a diagram is controlled by the macro \dia@above. It just delegates the information to a couple of other macros, which then generate the displayed information above the diagram.

\newboolean{above@newline}
\newcommand{\above@newline}{\ifthenelse{\boolean{above@newline}}{\linebreak}{\setboolean{above@newline}{false}}}
As before, the macro \dia@below creates the displayed information below the
chessboard - forwarding to a couple of other macros.
\def\dia@below{% 
\bgroup\if@stipulation\@dia@stipulation\fi\ifx@cond\else\@dia@condition\fi\ifx@twins\else\@dia@twins\fi\@dia@piecedefs\@dia@remark\ifthenelse{\boolean{@solafterdiagram}}{{\below@newline}{\hbox{}}\hbox{}}\egroup
}
\dia@number The \dia@number macro simply creates the diagram number in a single paragraph.
\def\dia@number{% \ifdi@no\above@newline\authorfont\thediag\fi%
}
\dia@authors This macro is used to create the list of authors specified within the \author macro inside the diagram environment. Depending on the \TeX-boolean normal@names we either simply display the registered author or parse the list of authors by using the generic \@parseTokenList macro.
\def\dia@authors{% \ifauth@r\ifnormal@names\above@newline\authorfont\the\aut@tk\fi\else\@parseTokenList\fi%
}
\else
  \let\@action=@diawritename% Parse the list of authors
  \@parseTokenlist\author\tk;
\fi
\fi
}
\def\@show@city#1;{\if@notfirst \slash \else@notfirsttrue\fi#1}
\def\p@rsecity#1; {\@show@city#1;\looklist}
\def\@dia@city{\ifthenelse{\boolean{showcity}}{\if@city
  \above@newline\bgroup\cityfont\@notfirstfalse\let\@action=p\@rsecity\@parseTokenlist\city\tk;\egroup
  \fi}{}}
\def\@dia@after{\if@after \bgroup\above@newline\dedicfont\the\after\tk\egroup\fi}
\def\@dia@version{\if@version \above@newline\bgroup\dedicfont\the\version\tk\egroup\fi}
\def\@dia@date{\ifnum\from@month>\z@ \if@day
  \the\day\tk.\write@month\from@month\fi\else\write@month\from@month\fi
  \@notfirstfalse\ifnum\to@month>\z@--\write@month\to@month\fi\if@day.\else/\fi
  \fi\fi\if@year\the\year\tk\fi}
}
\v@frame@dist=tw@p@
\h@frame@dist=tw@p@
\space@frame@dist=zw@
\v@space@dist=1em
\def\@show@figurine{%
\noindent\@figurine@number\@figurine@author\@figurine@city\@figurine@after\@figurine@correction\@figurine@version\@figurine@source\@figurine@tournament\@figurine@award\@figurine@dedic\@figurine@pieces\@figurine@stip\@figurine@twins\@figurine@conditions\@figurine@remarks\@figurine@computer%
}
\def\@figurine@number{{\authorfont\thediag})}
\def\p@rseauthor@figurine#1,#2; {%\if@notfirst, \else\@notfirsttrue\fi#2 #1\l@@klist%
\def\@figurine@author{%\ifauth@r\authorfont\@notfirstfalse\let\@action=p@rseauthor@figurine\@parseTokenlist\aut@tk;\ 
\fi}%
\def\@figurine@city{%\if@city\cityfont\@notfirstfalse\let\@action=p@rsecity\@parseTokenlist\city@tk;\ 
\fi}%
\def\@figurine@after{\if@after{\dedicfont\ \the\after@tk}fi}
\def\@figurine@correction{\if@correction{\dedicfont\ \the\correction@tk}fi}
\def\@figurine@version{\the\version@tk}
\if@version{\dedicfont\ \the\version@tk}\fi%

\def\@figurine@source{%
  \if@source%
    \sourcefont%
    \if@sourcenr\the@sourcenr@tk\fi%
    \the\source@tk%
  \if@year%
    \ %
    \if@day%
      \ifnum\from@month>0%
        \the\from@month%
        \write@month\from@month%
      \ifnum\to@month>0%
        \write@month\to@month%
      \fi%
    \fi%
  \else%
    \write@month\the@from@month%
    \ifnum\to@month>0%
      \write@month\the@to@month%
    \fi%
  \fi%
  \ %
  \if@issue , \the\issue@tk\fi%
  \if@pages , \the\pages@tk\fi%
  \fi%}
}

\def\@figurine@tournament{%
  \if@tournament{\awardfont\ \the\tournament@tk}\fi%
}

\def\@figurine@award{%
  \if@award{\awardfont\ \the\award@tk}\fi%
}

\def\@figurine@dedic{%
  \if@dedication{\awardfont\ \the\dedic@tk}\fi%
}

\def\show@squares#1\e@list{\ch@fig{\the\help@a}#1, }

\def\@figurine@pieces{%
  \if@pieces%
    \let\@action=\p@rsepieces%
    \let\piece@job=\show@squares%
    \@parseTokenlist\pieces@tk,%
  \fi%}

\def\@figurine@stip{%
\def\getpi@ce\get@text{\text@tk={#1}\read@square}
\def\getpi@ce{\if#1B\relax\else
  \if#1\ds@knight\advance\help@a@one\else
    \if#1\ds@bishop\advance\help@a@two\else
      \if#1\ds@rook\advance\help@a@three\else
        \if#1\ds@queen\advance\help@a@four\else
          \if#1\ds@king\advance\help@a@five\else
            \if#1C%
              % An imitator should not count for any color.
              \let\cpd@stepcounterPieces\relax
              \advance\help@a@fifteen\else
                \if#1E% Equihopper
                  \advance\help@a@twentyone\else
                    \if#1X% Equihopper senkrecht
                      \advance\help@a@eighteen\else
                        \errmessage{invalid piece!}
                      \fi
                    \fi
                  \fi
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
\fi\fi\fi\fi\fi
\futurelet\r@tate\chkr@tate}
\def\chkr@tate{\if\r@tate \ds@rotation@upsidedown\advance\help@a@ten\let
\nextpr@c=\skipr@t\else\if\r@tate \ds@rotation@left\advance\help@a@six\let
\nextpr@c=\skipr@t\else\if\r@tate \ds@rotation@right\advance\help@a@thirteen\let
\nextpr@c=\skipr@t\else\let\nextpr@c=\piece@job\fi\fi\fi
\nextpr@c}
\def\skipr@t#1\piece@job\let\fi}{
\def\l@@k{\futurelet\whatsnext\parsefi@lds}
\def\parsefi@lds{\if\whatsnext\e@list\let\nextpr@c=\relax\else\let\nextpr@c=
\read@square\fi\nextpr@c}
\def\set@current@square@index#1#2{\setcounter{cpd@current@square@index}{#1+\value{cpd@linesmax}*#2}}
\def\set@current@square@value#1{\expandafter\xdef\csname cpd@square@roman{cpd@current@square@index}\endcsname{#1}}
\def\get@current@square@value{\setcounter{cpd@current@square@index}{1+#2\value{cpd@linesmax}+#2}}
\def\set@piece{\setcounter{cpd@current@square@index}{\roman{cpd@current@square@index}}\endcsname{\roman{cpd@current@square@index}}\endcsname}
\def@selGrid#1#2, {% 
\ifnum\pl@ne=\current@plane% 
 \if#1h% 
 \@hGrid#2% 
\else\if#1v% 
 \@vGrid#2% 
\else% 
 \errmessage{Wrong GridSelector #1}% 
\fi\fi% 
\fi% 
\l@@klist% 
}% 
\def\@stdgrid{\def\help@a={tw@} \loop% 
 \ifnum\help@a<\lines@max% 
 \@vGrid{0}{\the\help@a}{\the\rows@max} 
 \advance\help@a	w@% 
 \repeat% 
 \help@a={tw@} \loop% 
 \ifnum\help@a<\rows@max% 
 \@hGrid{\the\help@a}{0}{\the\lines@max} 
 \advance\help@a	w@% 
 \repeat% 
 \box\plane@box% 
}}% 
\def\ds@xlabel#1{\label@tk={#1}\@labeltrue% 
}% 
\def\@set@label#1;{\ifds@label\label{#1}\fi}% 
\init@vars{% 
 \global\s@lufalse 
 \setboolean{cpd@checkPieceCounts}{false}% 
 \setcounter{cpd@defWhitePieces}{\z@}% 
 \setcounter{cpd@defBlackPieces}{\z@}% 
 \setcounter{cpd@defNeutralPieces}{\z@}% 
 \setcounter{cpd@whitePieces}{\z@}% 
 \setcounter{cpd@blackPieces}{\z@}% 
 \setcounter{cpd@neutralPieces}{\z@}% 
 \lin@\z@% 
}% 
\clear@board{% 
 \ifthenelse{\boolean{allwhite}\and\boolean{switchcolors}}% 
 \errmessage{`allwhite' and `switchcolors' do not make sense used together.}%; 
 \setcounter{cpd@current@row}{0}% 
 \whiledo{\value{cpd@current@row}<\value{cpd@rowsmax}}{}% 

1691 \setcounter{cpd@current@line}{0}\%
1692 \whiledo{\value{cpd@current@line}<\value{cpd@linesmax}}{%
1693 \set@current@square@index{\value{cpd@current@line}}{\value{cpd@current@row}}\%
1694 \setcounter{cpd@helper}{\the\current@plane+\value{cpd@current@line}+\value{cpd@current@row}}\%
1695 \ifthenelse{\isodd{\value{cpd@helper}}}{{\set@current@square@value{\@whitefield}}}{{\set@current@square@value{\@blackfield}}}\%
1696 \addtocounter{cpd@current@line}{1}\%
1697 \addtocounter{cpd@current@row}{1}\%
1698 \%}
1699 \def\put@row#1{%
1700 \lin@z\%}
1701 \help@b=\#1\%
1702 \advance\help@b\brd@ff\%
1703 \hbox{%
1704 \ifthenelse{\boolean{legend}}{{\advance\@rows'1\%}
1705 \llap{\raise .25\sq@width\hbox{\legendfont \char\@rows \ }}\%
1706 \}}\%
1707 \if@stereo\%
1708 \ifnum\current@plane>\z@\%
1709 \llap{\raise .5\sq@width\hbox{\cpd@boardfont c6 \ }}\%
1710 \fi\%
1711 \fi\%
1712 \fi\%
1713 \hbox to \z@\{\vbox to \sq@width{}}\%
1714 \set@current@square@index{\lin@}{#1}\%
1715 \loop\%
1716 \get@current@square@value\%
1717 \llap{\raise .25\sq@width\hbox{\cpd@boardfont c6 \ }}\%
1718 \% \ifnum\count\help@b=\m@ne\wF\%
1719 \else\char\count\help@b\fi\%
1720 \advance\lin@\@ne\%
1721 \addtocounter{cpd@current@square@index}{1}\%
1722 \% \advance\help@b\@ne\%
1723 \ifnum\lin@<\lines@max\repeat\%
1724 \}%
1725 \def\put@line#1{%
1726 \lin@z\%}
1727 \help@b=\#1\%
1728 \advance\help@b\brd@ff\%
1729 \hbox{%
1730 \if@stereo\%
1731 \ifnum\current@plane>\z@\%
1732 \llap{\raise .5\sq@width\hbox{\cpd@boardfont c6 \ }}\%
1733 \fi\%
1734 \fi\%
1735 }%
\singlespace

\def\@parseTokenlist#1#2{\expandafter\l@@klist\the#1#2 \e@list}
\def\@addToPlane#1{\setbox\plane@box=\vbox{\hbox{\@parseTokenlist#1,\box\plane@box}}}
\def\put@plane{\if@stdgrid\@stdgrid\fi
\let\@action\read@square\let\plane@job\set@frame\@addToPlane\fieldframe@tk
\fi
\if@fieldtext\let\@action\p@rsetext\let\plane@job\set@text\@addToPlane\fieldtext@tk\fi
\if@gridlines\let\@action\read@plane\let\plane@job\set@grid\@addToPlane\gridlines@tk\else\fi
\ifthenelse{\boolean{allwhite}}{\psset{unit=\sq@width,linewidth=.4pt,linestyle=dotted,dotsep=.125}\setcounter{field@border}{1}\whiledo{\value{field@border}<\lines@max}{\psline(\value{field@border},0)(\value{field@border},\rows@max)\addtocounter{field@border}{1}}\setcounter{field@border}{1}}{\setbox\plane@box=\vbox{\hbox{\psset{unit=\sq@width,linewidth=.4pt,linestyle=dotted,dotsep=.125}\setcounter{field@border}{1}\whiledo{\value{field@border}<\lines@max}{\psline(\value{field@border},0)(\value{field@border},\rows@max)\psline(\value{field@border},0)(\value{field@border},\rows@max)\addtocounter{field@border}{1}}\setcounter{field@border}{1}}%
\whiledo{\value{field@border}<\rows@max}{% 
  \psline{0,\value{field@border}}{\lines@max,\value{field@border}}% 
  \addtocounter{field@border}{\@ne}}%
\box{plane@box}
}}%}
% Now we should clear the board
\clear@board%
% Let us now parse the list of pieces
\if@pieces%
  \let\@action\parsepieces%
  \let\piece@job\l@@k\let\plane@job\set@piece%
  \@parseTokenlist{pieces@tk,}%
\fi%
% Now we clear all fields, which are given using \nofields
\if@nofields%
  \let\@action\read@square%
  \let\plane@job\set@nofield%
  \@parseTokenlist{nofields@tk,}%
\fi%
% Now we can put the pieces to the board
\global\setbox{plane@box}=\hbox{%
  \vbox{\rlap{\box{plane@box}}}%
  \vbox{%
    \chessfont%
    \baselineskip=\z@\lineskip=\z@%
    \@rows=\rows@max%
    \loop%
      \put@row\@rows%
      \ifnum\@rows>\z@\repeat%
    % Put a legend if wanted
    \ifthenelse{\boolean{legend}}{%
      \vbox{\rlap{\hbox{\hspace*{\inner@frame}\
          \lin@\z@\%}}}
      \loop%
        \hbox to \sq@width{\hfill{\advance\lin@'a\legendfont\char\lin@}\hfill}%
        \ifnum\lin@<\lines@max\repeat%
      \vbox{\rlap{\hbox{\hspace*{\inner@frame}\
          \lin@\z@\%}}}
    }%}
\def\put@sqs@normal{%
  \put@plane%
  \setbox{sq@box}=\ hbox{%
    \inner@henbox{\box{plane@box}}%
\def\put@sqs@stereo{% 
\setbox\sq@box=\hbox{\hfil\vbox{% 
\current@plane=5% 
\vskip\v@space@dist 
\loop% 
  \advance\current@plane\m@ne% 
  \ifnum\current@plane=\z@% 
    \lines@max=\eight% 
    \rows@max=\eight% 
  \else% 
    \lines@max=\four% 
    \rows@max=\four% 
  \fi% 
  \rlap{{\cpd@boardfont\ A}}\or% 
  \rlap{{\cpd@boardfont\ B}}\or% 
  \rlap{{\cpd@boardfont\ C}}\or% 
  \rlap{{\cpd@boardfont\ D}}% 
  \fi% 
\hfil\vskip\v@space@dist% 
\ifnum\z@<\current@plane\repeat% 
}\hfil}%
\endgroup
\hbox to \bd@width{% 
\vfil\inner@henbox{\box\plane@box}\% 
\ifcase\current@plane\or% 
  \rlap{{\cpd@boardfont A}}\or% 
  \rlap{{\cpd@boardfont B}}\or% 
  \rlap{{\cpd@boardfont C}}\or% 
  \rlap{{\cpd@boardfont D}}% 
  \fi% 
\hfil\vskip\v@space@dist% 
\ifnum\z@<\current@plane\repeat% 
}\hfil}%
\endgroup
\def\stereo@center{% 
\ifnum\current@plane=\z@% 
\setbox\plane@box=\vbox{\hbox{% 
\@hGrid\tw@\tw@\four\@hGrid\tw@ 6\four\% 
\@vGrid\tw@\tw@\four\@vGrid6\tw@\four\% 
\box\plane@box% 
}}% 
\fi% 
\vskip\v@space@dist% 
\ifnum\z@<\current@plane\repeat% 
}\hfil}%
\endgroup
\def\put@sqs@space@vertical{% 
\setbox\sq@box=\hbox{\hfil\vbox{% 
\current@plane=\planes@max% 
\vskip\v@space@dist 
\loop% 
  \advance\current@plane\m@ne% 
  \ifnum\current@plane=\z@% 
    \lines@max=\eight% 
    \rows@max=\eight% 
  \else% 
    \lines@max=\four% 
    \rows@max=\four% 
  \fi% 
  % Now we should clear the board 
  \begingroup% We need this for inner loops! 
  \clear@board% 
  \put@plane% 
\endgroup
\hbox to \bd@width{% 
\vfil\inner@henbox{\box\plane@box}\% 
\ifcase\current@plane\or% 
  \rlap{{\cpd@boardfont A}}\or% 
  \rlap{{\cpd@boardfont B}}\or% 
  \rlap{{\cpd@boardfont C}}\or% 
  \rlap{{\cpd@boardfont D}}% 
  \fi% 
\hfil\vskip\v@space@dist% 
\ifnum\z@<\current@plane\repeat% 
}\hfil}%
\endgroup
\def\put@sqs@space@vertical{% 
\setbox\sq@box=\hbox{\hfil\vbox{% 
\current@plane=\planes@max% 
\vskip\v@space@dist 
\loop% 
  \advance\current@plane\m@ne% 
  \ifnum\current@plane=\z@% 
    \lines@max=\eight% 
    \rows@max=\eight% 
  \else% 
    \lines@max=\four% 
    \rows@max=\four% 
  \fi% 
  % Now we should clear the board 
  \begingroup% We use inner loops! 
  \clear@board% 
  \put@plane% 
\endgroup
\hbox to \bd@width{% 
\vfil\inner@henbox{\box\plane@box}\% 
\ifcase\current@plane\or% 
  \rlap{{\cpd@boardfont A}}\or% 
  \rlap{{\cpd@boardfont B}}\or% 
  \rlap{{\cpd@boardfont C}}\or% 
  \rlap{{\cpd@boardfont D}}% 
  \fi% 
\hfil\vskip\v@space@dist% 
\ifnum\z@<\current@plane\repeat% 
}\hfil}%
\endgroup
\innerbox{\box\plane\box}
\advance\current\plane'A
\rlap{\cpd\board\font{\ \char\current\plane}}
\endgroup
\vskip\vspace\dist
\ifnum\z@<\current\plane\repeat%
\hfil}%
}
\def\put@sqs@space@horizontal{%
\setbox\sq@box=\hbox{%
\current\plane=\z@
\hskip\h@space\dist
\loop%
% Now we should clear the board
\begingroup% We use inner loops!
\clear\board%
\put@plane%
\hbox to \bd@width{%
\innerbox{\box\plane\box}
\advance\current\plane'A
\rlap{\cpd\board\font{\ \char\current\plane}}
\endgroup
\hskip\h@space\dist
\advance\current\plane\@ne
\ifnum\planes\max>\current\plane%
\repeat%
%}
\def\put@sqs@space{%
\ifsquare@vertical%
\put@sqs@space@vertical%
\else%
\put@sqs@space@horizontal%
\fi%
\def\@inner@vframe{%
\if@vframe%
\vrule width \inner@frame%
\else%
\hskip\inner@frame%
\fi%
\def\@inner@hframe{%
\if@hframe%
\hrule height \inner@frame%
\else%
\vskip\inner@frame%
\fi%
\def\inner@v@frame@rule{\if@stereo\@inner@vframe\else\if@space\@inner@vframe\else\if@leaveOuter\vrule width \inner@frame\else\@inner@vframe\fi\fi\fi}\fi\fi\fi}
\def\inner@h@frame@rule{\if@stereo\@inner@hframe\else\if@space\@inner@hframe\else\if@leaveOuter\hrule height \inner@frame\else\@inner@hframe\fi\fi\fi}\fi\fi\fi}
\def\inner@henbox#1{\hbox{\inner@v@frame@rule\vbox{\inner@h@frame@rule#1\inner@h@frame@rule}\inner@v@frame@rule}}
\def\@outer@vrule{\vrule width \outer@frame}
\def\@outer@hrule{\hrule height \outer@frame}
\def\outer@v@frame@rule{\if@stereo\@outer@vrule\else\if@space\@outer@vrule\else\if@leaveOuter\if@vframe\@outer@vrule\else\hskip\outer@frame\fi\else\@outer@vrule\fi\fi\fi}\fi\fi\fi}
\def\outer@h@frame@rule{\if@stereo\@outer@hrule\else\if@space\@outer@hrule\else\if@leaveOuter\if@hframe\@outer@hrule\else\vskip\outer@frame\fi\else\@outer@hrule\fi\fi\fi}\fi\fi\fi}}
\@outer@h@rule% 
\fi \fi \fi% 
2016 \def\outer@henbox#1{% 
\outer@h@frame@rule% 
\hbox{% 
\outer@v@frame@rule% 
\ifspace@vertical% 
\hskip\h@frame@dist% 
\fi% 
\vbox{% 
\ifspace@vertical% 
\vskip\v@frame@dist% 
\else% 
\vskip\v@space@dist% 
\fi% 
#1% 
\ifspace@vertical% 
\vskip\v@frame@dist% 
\else% 
\vskip\v@space@dist% 
\fi% }% 
\ifspace@vertical% 
\hskip\h@frame@dist% 
\fi% 
\outer@v@frame@rule% }% 
\outer@h@frame@rule% }

\def\ch@fig#1{% 
\ifvmode
\noindent\fi% 
\hbox{\chtextfont.lower.1\fontdimen\tw@.chtextfont\hbox{\char#1}}} 

\def\@aidxitem#1, #2, #3{% 
\par\medskip#1, \write@christian#2; \dotfill #3% 
} 

\def\dia@index#1\@sep#2[#3]{\index[#3]{#2|showlabel{#1}}} 

\def\parse@aindex#1; {} 

\def\showlabel#1{\if@develop% 
\raise1ex\hbox{\labelfont#1}\penalty\exhyphenpenalty% 
\fi% } 

\def\@aidxitem#1, #2, #3{% 
\par\medskip#1, \write@christian#2; \dotfill #3% 
} 

\def\dia@index#1\@sep#2[#3]{\index[#3]{#2|showlabel{#1}}} 

\def\parse@aindex#1; {} 

\expandafter\dia@index\the\label@tk\@sep#1[author]\l@@klist
\def\loop@color{% 
\bgroup
\w@cnt\z@%
\loop
\ifcase\w@cnt%
\def\@theColor{\ds@white}%
\or%
\def\@theColor{\ds@neutral}%
\or%
\def\@theColor{\ds@black}%
\fi%
\loop@piece%
\advance\w@cnt\@ne%
\ifnum\w@cnt<\thr@@\repeat%
\egroup%
}
\def\loop@piece{% 
\bgroup
\b@cnt\z@%
\loop
\ifcase\b@cnt%
\def\@thePiece{\ds@pawn}%
\or%
\def\@thePiece{\ds@knight}%
\or%
\def\@thePiece{\ds@bishop}%
\or%
\def\@thePiece{\ds@rook}%
\or%
\def\@thePiece{\ds@queen}%
\or%
\def\@thePiece{\ds@king}%
\fi%
\expandafter\xdef\csname \@theColor\@thePiece\@theRotation\endcsname{%
\noexpand\ch@fig{\the\help@a} %
\advance\b@cnt\@ne%
\ifnum\b@cnt<6\repeat%
\egroup%
}
\elchfont@fselch
Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.
Change History

v0.1
General: First Version 1

v0.2
General: Added the documentation for the information collecting macros which may be used inside a environment. 1

v0.3
General: Added list of commands which should not be indexed. 1

v0.4
General: Added most missing user documentation. 1

v0.5
General: Fixed wrong piece count when using imitators 1

v0.6
General: Changed erroneous code to parse given piececount. 1

v1.10
General: Fixed issue: 03f/658:om: diagram sty: evaluation of options 11pt and 12pt does not work. 1
v1.11
General: Fixed issue 03f/e20:om:
diagram.sty: piecedefs should
be written after twins and be-
fore remarks. ........................ 1

v1.11.1
General: Fixed issue 03f/b31:om:
diagram.sty: label and ref
don’t respect diagnum prefix
or diagnumbering setting. ... 1

v1.12
General: Implemented issue:
03f/fc0:om: diagram.dtx:
change def x to newcommand.
Changed name of internal
commands ds@left, ds@right,
ds@upsidedown due to a nam-
ing collising with options from
eurosym.sty. ........................ 1

v1.5
General: Added license meta-
comment to publish package
on ctan. ............................... 1

v1.5.1
General: Fixed font problem
when writing producing piece-
counter in small diagrams. ... 1

v1.5.2
General: Added some per-
cent signs at line ends in
@start@diagram and end-
diagram to avoid accidently
added spaces. ........................ 1

v1.5.3
General: Changed switch, which
is used to decide, whether infor-
mation about computer
proof is displayed to use stan-
dard boolean syntax. Symbols
about computer proof are
now created by standard com-
mands and may therefore be
changed by users. .................... 1

v1.5.4
General: Defined 2 different ver-
sions of @writename com-
mmand, to be able to change it
in other stylefiles for the part
over the diagram without in-
fluencing the one used for the
solution. Added commands to
set white, black and neutral
Circles within text. ............... 1

v1.5.5
General: Changed amount of low-
ering figurine pieces. .......... 1

v1.5.6
General: Added new command
’solpar’ to allow use of ‘putsol’
inside a window environment. 1

v1.6
General: Added boolean show-
city and code to suppress dis-
play of city, when showcity is
false. Added commands for
academic titles, which allow to
suppress their display. .......... 1

v1.6.1
General: Added new command
piecedefs specify names of
fairy pieces for rotated pieces. 1

v1.6.2
General: Added boolean for all-
white problems. .................... 1

v1.6.3
General: Added boolean for board
with switched field colors. ... 1

v1.6.4
General: Added convenience
command for ’allwhite’ and
’switchcolors’ booleans. .......... 1

v1.6.5
General: As suggested by Torsten
Linß and Thomas Brand
added support for Equihopper
and turned Equihopper (X) ... 1

v1.6.6
General: Introduced new com-
mmand to switch to the default
diagram size. ....................... 1

v1.6.7
General: Fixed issue ’19a’ with all-
white on quadratic fields. ... 1

v1.7.0
General: Implemented Issue ’32c’:
the command diagnum now
allows to specify a prefix to
be used for the following dia-
grams. ............................ 1

v1.8.0
General: Implemented issue
’03f/e2a’: Added code to dis-
play a legend around the
board, controlled by the
boolean ‘legend’. ............... 1

v1.8.1
General: Implemented issue
'03f/83c': changed tex boolean solafterdiagram to latex boolean. ........................................ 1

v1.9

General: Implemented issue

'03f/932': Renamed boardfont to cpd@boardfont due to a naming collision with another chess package. Changed all font definitions to newcommand instead of def. .......... 1